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GRAIN-MILK PRICE RELATIONSHIPS BY REGIONS

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Wartime demands for additional dairy products and the goal program developing out of them have focused attention on factors influencing production including grain-milk price relationships. This report presents briefly some information concerning geographic variations in milk and grain prices and other factors related to the distribution of production goals.

Form in which Milk is Sold from Farms

Something of the character of dairying in a region is indicated by the form in which milk is sold from farms (fig. 1). In the attached map, based mainly on 1939 census data by counties, all shaded areas are classified in accordance with the percentage of the milk sales which leave the farm as whole milk. The heaviest shading indicates areas in which two-thirds or more of the milk sales are whole milk, the intermediate shading those between one-third and two-thirds, and the lightest shading those with less than one-third. In other words, there are (1) whole milk areas, (2) mixed areas, and (3) cream (including farm butter) areas. The large unshaded

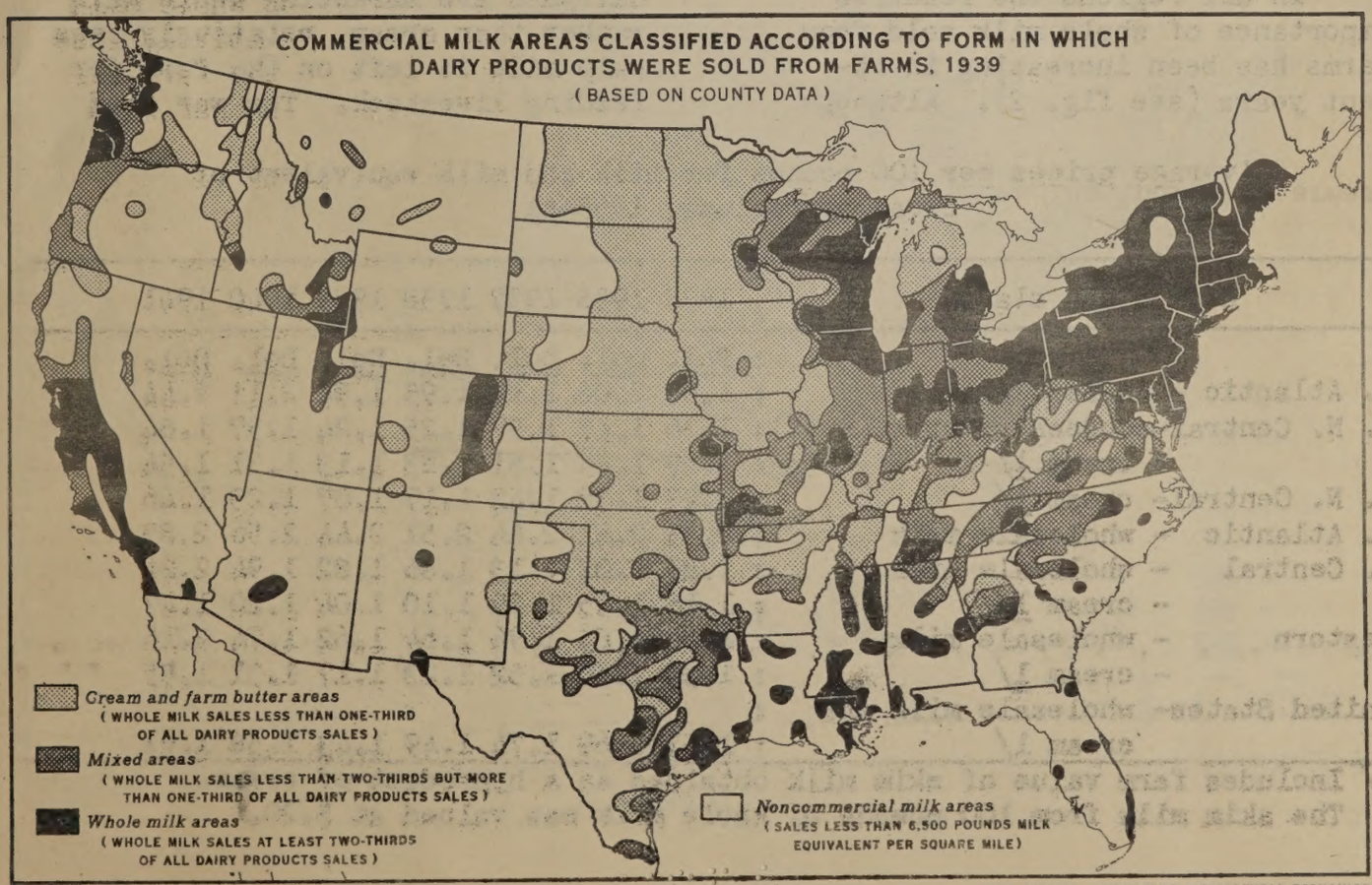

FIGURE 1

areas are those selling less than 6,500 pounds of milk per square mile. These are relatively unimportant in the national picture.

Sales of whole milk are dominant in the northern dairy areas east of the Mississippi and in scattered fluid milksheds. Milk leaving the farm as whole milk may, of course, be eventually used either for fluid milk and cream or for various manufactured products.

Three-fourths of the commercial milk production is concentrated in the northeastern quarter of the United States. Per unit of land area, this region produces about 10 times as much milk for sale as the rest of the country. Since 1929, although total milk production and sales have increased in all regions, the proportion of the national total sold by each major region has changed very little.

In all regions the relative importance of whole milk sold from farms has been increasing in recent years (see fig. 2). Although

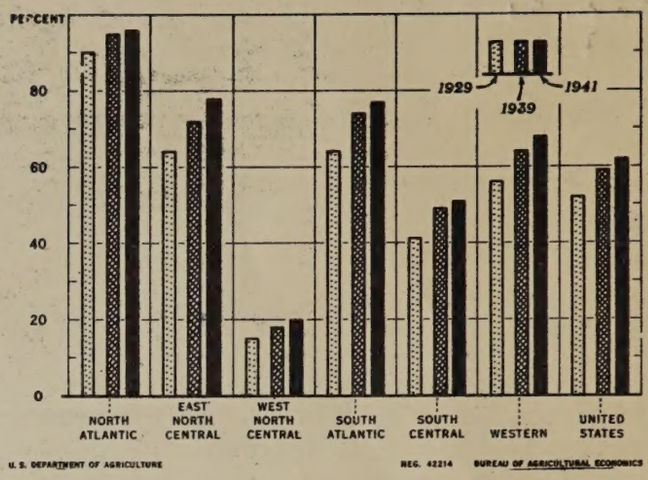

Fig. 2.- Percentage of Milk Sold from Farms as Whole Milk 1929, 1939, 1941.

increased consumption of fluid milk and cream has absorbed some additional milk, the bulk of the increased deliveries of whole milk has been used for manufactured products. The production of cheese and evaporated milk have both doubled since 1929 and creamery separation of milk for manufacture of butter and skim milk products has increased greatly. Because more dairymen are marketing whole milk rather than cream, relatively less skim milk is left on the farm for feeding livestock. The war food

Average prices per 100 pounds for milk and milk equivalent of cream by regions, 1935-41

Region and class	1935	1936	1937	1938	1939	1940	1941
	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.
N. Atlantic - wholesale milk	1.98	2.06	2.12	1.95	1.96	2.11	2.44
E. N. Central-condensery milk (3.5%)	1.36	1.57	1.57	1.25	1.24	1.37	1.84
- cream 1/	1.29	1.45	1.51	1.23	1.13	1.31	1.54
W. N. Central- cream 1/	1.23	1.38	1.42	1.17	1.07	1.23	1.46
S. Atlantic - wholesale milk	2.35	2.41	2.64	2.51	2.44	2.56	2.83
S. Central - wholesale milk	1.89	2.02	2.13	1.86	1.82	1.94	2.26
- cream 1/	1.18	1.35	1.39	1.10	1.04	1.20	1.47
Western - wholesale milk	1.65	1.85	1.96	1.64	1.62	1.74	2.16
- cream 1/	1.33	1.50	1.52	1.23	1.17	1.31	1.55
United States- wholesale milk and cream 1/	1.51	1.69	1.74	1.49	1.43	1.58	1.91

1/ Includes farm value of skim milk obtained as a byproduct of cream. The skim milk from 100 pounds of whole milk was valued at $.20.

program has accelerated the trend toward more complete utilization of milk as human food.

Milk Prices

Prices on a milk equivalent basis are shown in the preceding table. Prices are highest in the South and in the North Atlantic regions; those for milk sold as cream are low in all areas. Prices in condensery areas are somewhere in between.

Milk prices were somewhat lower in 1939 than in adjacent years. By 1941 they were about one-third higher than in 1939. In all regions they moved rather uniformly from 1939 through 1941 except that condensery prices increased somewhat more and cream prices somewhat less than the average.

Grain Prices

The lowest prices of grain (including other concentrates) fed to milk cows are found in the surplus grain producing areas of the central United States and in a few areas of the Mountain States. (See fig. 3.)

Higher prices are found as grain must be moved east, south, or west from these central surplus areas into feed-deficit areas. The highest prices for grain are found in the extreme Northeast and Southeast.

A considerable part, perhaps three-fourths, of the broad regional differences in grain prices appear to be directly related to transportation costs between surplus and deficit feeding areas. Other differences are explained by varia-

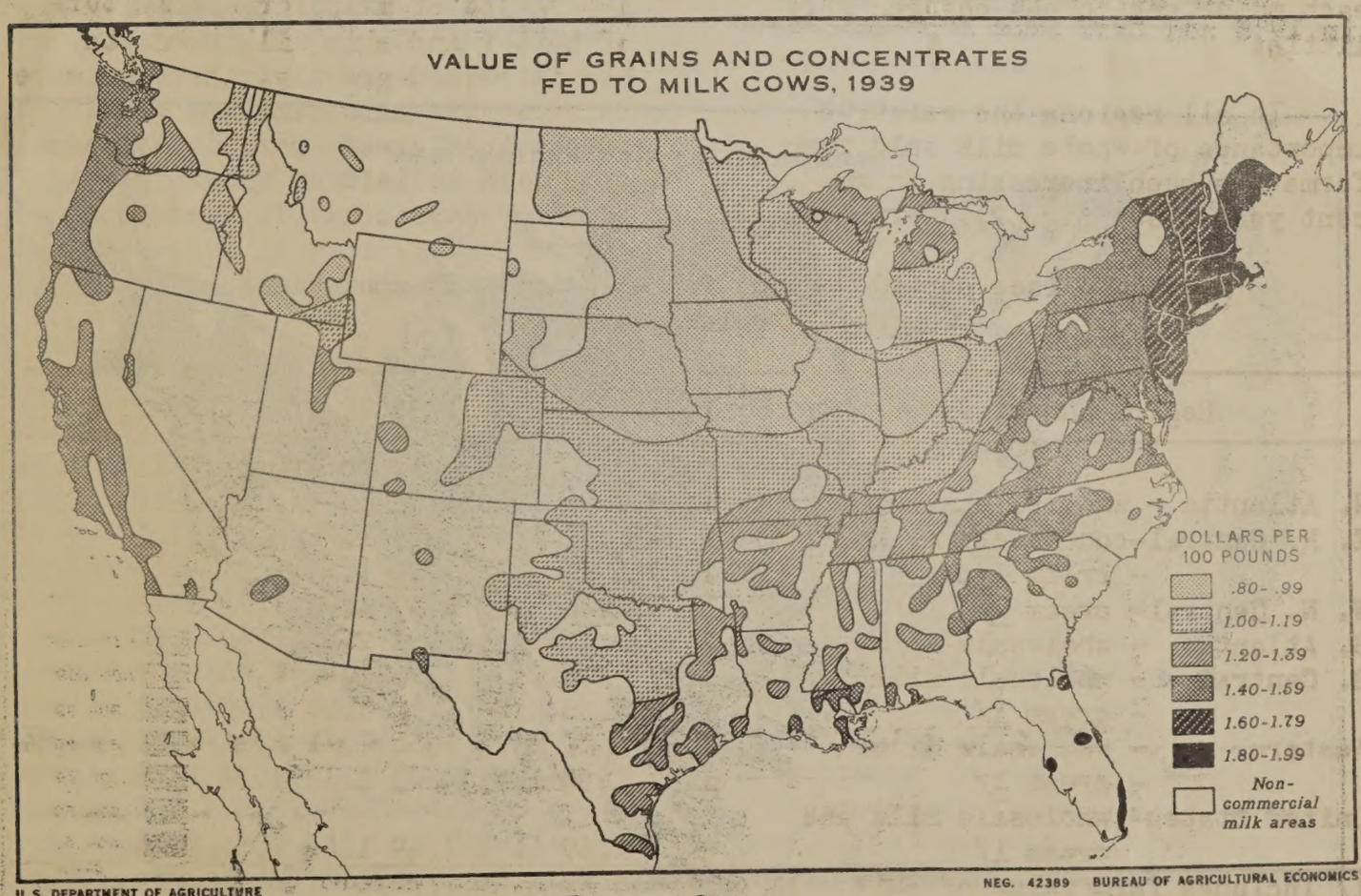

FIGURE 3

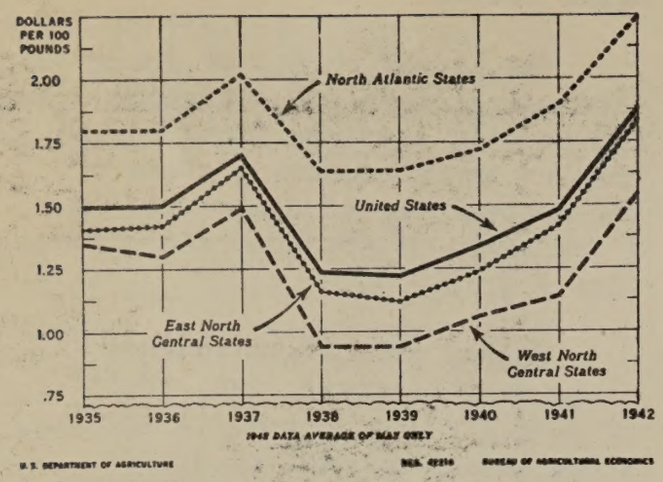

Fig. 4.- Changes in Value of Grain Fed to Milk Cows by Regions.

tions in the composition of dairy rations, especially in the protein content. Grinding, commercial mixing, and other services also tend to raise grain prices, especially where much of the grain fed to milk cows is purchased.

Grain prices like milk prices in 1938 and 1939 were somewhat lower than in the years immediately before or after. (See fig. 4.) By May 1942, they were 50 percent higher in most areas than in 1939. But there has been very little change in regional differences in grain prices. They have moved together rather uniformly. Of the regions not shown, the Western and the South Central regions were very close to the United States average and the South Atlantic was close to the North Atlantic.

Grain-Milk Price Ratios

The economic advantage from grain feeding depends neither on milk prices nor grain prices alone but on the relationship between the two. One method of expressing this is in the form of a grain-milk price ratio. A ratio expressed in this manner shows directly how much additional milk must be produced to pay for an additional pound of grain. For example, if the grain-milk price

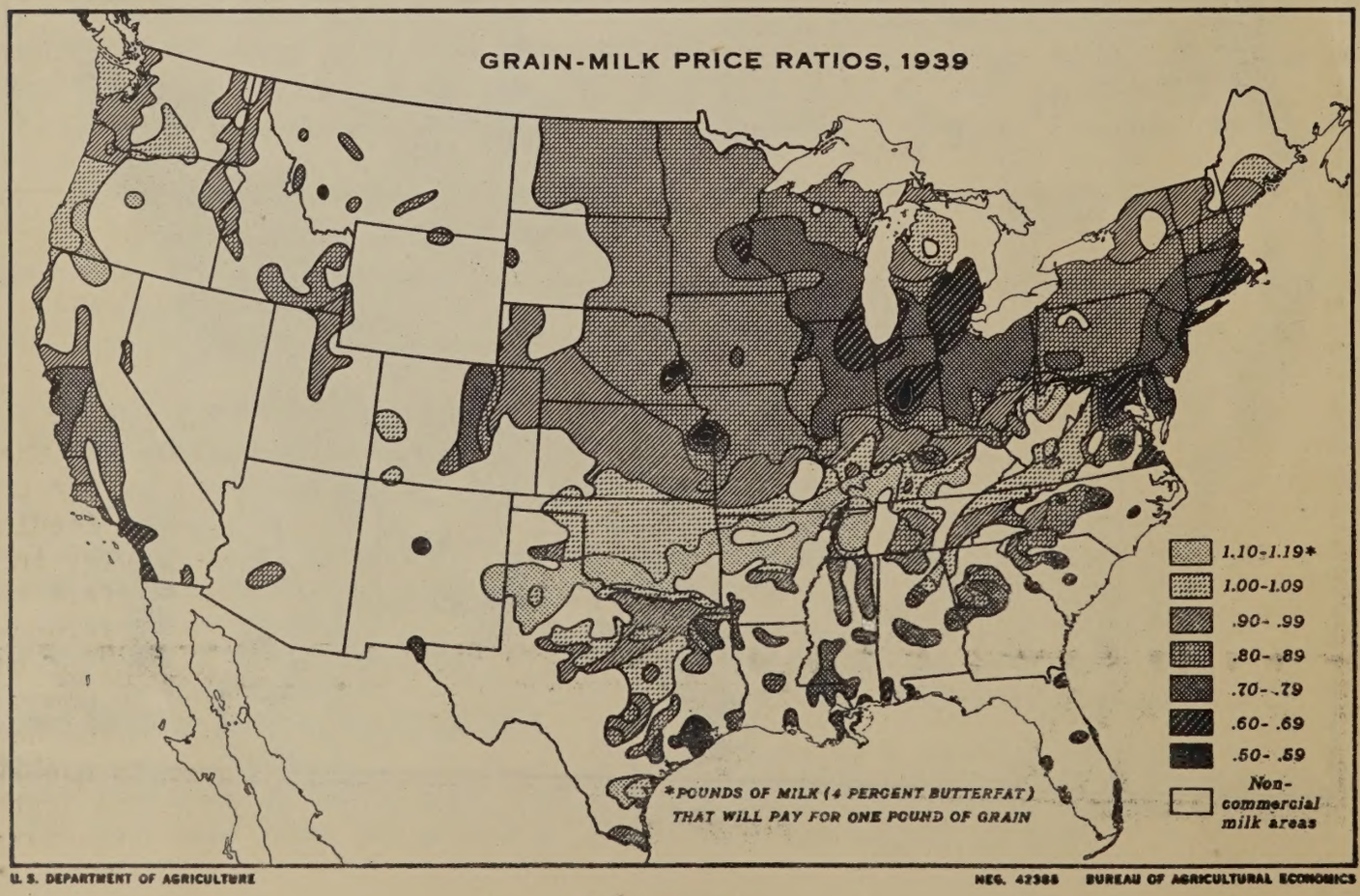

FIGURE 5

ratio is 0.75 it means that only 0.75 pound additional milk needs to be produced to pay for the additional pound of grain.

The geographic pattern shown by figure 5 resembles the pattern of milk prices (not shown here) but the variations are not so great as in either milk prices or grain prices. This is because of the geographic correlation between the two. The areas of high prices for milk tend to be areas of high prices for grain.

The most favorable (lowest) ratios are found in the North Atlantic States and in scattered areas elsewhere, particularly in city milksheds. A concentric pattern appears around the Boston and New York milksheds and around many smaller urban milksheds.

In the East North Central States the map shows the influence of the overlapping uses of milk for fluid purposes and various manufactured products. The relative uniformity within the West North Central States is due both to uniformity of grain prices and to the predominance of cream sales.

In the West and South the map is broken and more heterogeneous. There are large areas in this region with very little commercial milk production. It is worth noting, however, that grain-milk price ratios are very favorable in many areas of the West and South. Some of the most favorable ratios are found in city milkshed areas in the South Atlantic States. These areas usually include only small numbers of commercial dairy farms. For example, one city in Georgia with 50 thousand people received its entire 1941 fluid milk supply from about 100 dairy farms.

The least favorable ratios are found in the southern edge of the commercial cream area where butterfat prices are low and in parts of the Pacific Northwest where grain costs are fairly high. In these areas where the ratios lie between 1.00 and 1.20, grain feeding is relatively light. As the roughage is generally of good quality in the West, high production per cow is obtained even with light grain feeding.

Rates of Grain Feeding

Grain feeding in relation to milk produced has been heavy in recent years. (See fig. 6.) The regional differences appear to have remained fairly constant. The rates

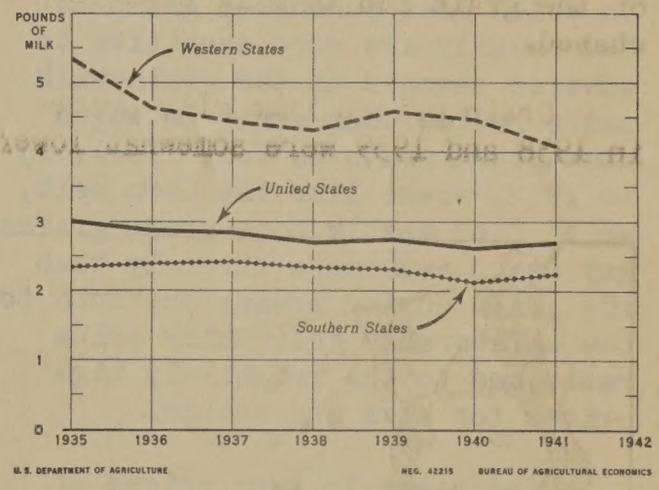

Fig. 6.- Milk Produced Per Pound of Grain Fed

are about the same for the North Atlantic, East North Central and the West North Central regions as for the United States. Lighter grain feeding is found in the West and heavier in the South. Much of these differences appear to be explained by differences in roughage, butterfat content of the milk, and quality and type of the cows. The roughage found in the West averages definitely higher in quality than in other regions. In the South the roughage is poor, the butterfat

test high, and the cows are less productive.

Apparently, the grain-milk price ratios have been taken into account by dairymen in each region. Grain feeding has become adjusted to the normal grain-milk price ratios. Of course, this does not mean that all dairymen are feeding correctly nor that all areas have reached the optimum adjustment. Nor does it mean that future adjustments may not be advisable under wartime conditions.

Current Developments and Outlook

Regional differences between price ratios may change. Areas in which most purchased grain is fed usually are more sensitive to adverse changes in the grain-milk price ratios than areas in which home-grown grain is fed. However, in 1942, areas like the Corn Belt, which feed mostly home-grown grains, may react even more strongly than the grain buying areas; due both to the unfavorable grain-milk price ratio,and to the relatively high prices for hogs and cattle.

Increases in farm prices of milk in fluid milk areas are likely to be limited because of the freezing of retail milk and cream prices at the March 1942 level. For areas in which milk is used mainly for manufactured dairy products, future prices will be determined mainly by army and lend-lease purchases and by possible increases in domestic demand for butterfat to offset the shortage of fats and oils.

On the other hand, uncontrolled prices of farm grains may leave the way open for relatively greater increases in grain costs in midwestern areas than in northeastern fluid milk areas where the freezing of certain millfeed prices is likely to have a stabilizing influence.

Within dairy manufacturing areas some sharp changes may be noted due to shifts in the demand for certain dairy products. In 1941 condensery and cheese areas had the largest increase in milk prices. Some decline in these prices since the first of this year, together with advances in butter prices, have helped cream areas to reach nearly a comparable level. Within cream areas, those that have skim milk drying facilities available have an extra advantage.

In all regions, however, grain-milk price ratios in 1942 have become less attractive than in 1941. The average United States ratios for recent years are indicated below:

	Grain-Milk Price Ratio	
1935 - .99	1939 - .85	
1936 - .89	1940 - .85	
1937 - .98	1941 - .77	
1938 - .83	1942 - .87	1/

1/ Based on first 5 months

The indicated ratio in 1942 is not only decidedly less favorable than in 1941, but is slightly less favorable than in any year since 1937. Although 1942 production has continued at a level higher than that of 1941, this has been due mainly to increased numbers of cows. With present price relationships offering less incentive for feeding additional grain than in 1941, there appears to be little reason for expecting higher production per cow as the result of heavier grain feeding.

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